CLAIMS

We Claim:

1. A DNA construct to generate and direct the processing, targeting and stably accumulating of target proteins in transgenic plant seeds, comprising:

a promoter sequence capable of directing expression in cells of the plant seeds;

a first DNA sequence encoding the target proteins;

a second DNA sequence having a transmembrane domain sequence and a cytoplasmic tail sequence which serve as anchors for delivering the target proteins to subcompartments of protein storage vacuoles of the cells; and

a third DNA sequence functioning as a termination region in the plant.

2. The DNA construct of claim 1, wherein the promoter is a seed-specific promoter.

3. The DNA construct of claim 2, wherein the promoter comprises a phaseolin promoter or a glutelin Gt1 promoter.

4. The DNA construct of claim 1, wherein the transmembrane domain sequence is derived from BP-80 and the cytoplasmic tail sequence is derived from BP-80 or α-TIP.

5. The DNA construct of claim 2, wherein the transmembrane domain sequence is derived from BP-80 and the cytoplasmic tail sequence is derived from BP-80 or α-TIP.

6. The DNA construct of claim 3, wherein the transmembrane domain sequence is derived from BP-80 and the cytoplasmic tail sequence is derived from BP-80 or α-TIP.

7. The DNA construct of the claim 1, wherein the subcompartments comprise globoids or crystalloids.

8. The DNA construct of claim 1, wherein the third DNA sequence is an NOS terminator.

9. The DNA construct of claim 1, further comprising a spacer sequence in front of the transmembrane domain sequence so that the anchor does not affect proper folding of the target protein.

10. The DNA construct of claim 2, further comprising a spacer sequence in front of the transmembrane domain sequence so that the anchor does not affect proper folding of the target protein.

11. The DNA construct of claim 9, wherein the spacer sequence is a proteolytic cleavage sequence.

12. The DNA construct of claim 10, wherein the spacer sequence is a proteolytic cleavage sequence.

13. The DNA construct of claim 11, wherein the protein storage vacuoles and their subcompartments provide a protease activity acting with the proteolytic cleavage sequence so that the target protein separates from the transmembrane domain.

14. The DNA construct of claim 12, wherein the protein storage vacuoles and their subcompartments provide a protease activity acting with the proteolytic cleavage sequence so that the target protein separates from the transmembrane domain.

15. The DNA construct of claim 10, further comprising an engineered signal peptide sequence.

16. The DNA construct of claim 15, wherein the signal peptide sequence is derived from proaleurain.

17. A vector comprising a DNA construct as defined in claim 1.

18. A host cell comprising a vector as defined in claim 17.

19. The host cell of claim 18, wherein the host cell is a plant cell.

20. The host cell of claim 19, wherein the plant cell is a monocot cell or a dicot cell.

21. A transgenic plant or progeny thereof comprising a DNA construct as defined in claim 1.

22. A transgenic plant seed comprising a DNA construct as defined in claim 1.

23. A method to construct a transgenic plant, comprising the steps of:

a) constructing a vector including a DNA construct defined as in claim 1;

b) transforming plant cells with the vector; and

c) regenerating the transgenic plant from the plant cells to produce the target proteins in seeds of the transgenic plant.

24. The method of claim 23, wherein the vector is a plasmid vector.

25. The method of claim 24, wherein the plasmid vector is a binary or superbinary vector.

26. The method of claim 25, wherein the vector is pSB130 or pBI121.

27. The method of claim 23, wherein the plant is tobacco or rice.

28. A method claim 27, wherein the plant cells are transformed utilizing an *Agrobacterium* system.

29. A method of claim 28, wherein the *Agrobacterium* system is an *Agrobacterium tumefaciens*-Ti plasmid system.